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(54) Title: CONTROLLING RESONANT PHOTOELASTIC MODULATORS		
(57) Abstract <p>A system and method for exploiting the dependance of a photoelastic modulator's (PEM's) resonance frequency on temperature (attributable to driving amplitude and to ambient temperature) to generally improve the performance of PEMs. In one embodiment there is provided a method and system for efficiently driving a series of multiple PEMs. To this end, each of the PEMs in a stack are separately tuned, as by controlling the power dissipated in each PEM, so that the resonance frequencies of all of the PEMs converge to a common frequency. Thus, all of the PEMs are simultaneously at resonance to ensure maximum efficiency and to maintain a selected total retardation amplitude. In another embodiment of the present invention, a single-element PEM is controlled in a manner to account for the subtle changes in the PEM's resonance frequency. To this end a control method and system is provided to keep constant both the retardation amplitude of the PEM and the actual operating frequency of the PEM, which frequency need not necessarily be the resonant frequency.</p>		

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